Environmental Awareness in Information Technology Adoption and Consumer Intention to Support Green Businesses: Research Agenda for Empirical Study

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Abstract

This agenda scrutinizes the individual perspective and awareness of environmental impact when purchasing and using IT products, the influence of society on IT-product use, the individual's attitude towards green-imaged businesses and the influence of green-imaged business policies. This study referenced communication theories and information system success models as the basis to break down the framework into three phases; Green IT Introduction, Green Individual Acceptance and Green Organizational Impact. This agenda suggests that a consumer will purchase or use environmentally friendly IT products if he/she acknowledges the benefits of protecting and preserving the environment while being willing to spend more money and time, accept reduced product capability and understand the meaning of eco-labels. In addition, the role that peers and superiors play in individual decisions and awareness of which behaviors damage the eco-system are also elements. Moreover, how willingness to purchase or use green IT product leads to the support of green-imaged businesses.
Keywords: Green IT, Green IT adoption, Green IT product, Green business, Green image, Green reputation, Green consumer, Environmental policy, Green policy

1. Introduction

Today environmentalists and researchers from various study areas are aware of the connection between information technology (IT) product consumption (usage, purchase, and discard) and its adverse impact on the environment, which means researcher scrutiny of green IT/IS (information system) is increasing rapidly. However, some research topics, such as how individual green IT adoption impacts an individual's intention to support green-imaged businesses; and how environmental policies (e.g., energy saving) of a workplace impact an individual, still need to be investigated. Furthermore, establishing sustainable development in society is a goal for public and private organizations [1, 2], but cannot be accomplished without consumer awareness and cooperation. Although most consumers understand the environmental problems facing us, some do not know which product is eco-friendly [3]. This fact illustrates that more investigation in the environmental awareness of consumers when adopting IT is needed. Therefore, this work has two foci; (1) to investigate perspectives and environmental awareness of consumers regarding their IT product purchasing behavior, knowledge of green IT products adoption/consumption, and environmental awareness within the social sphere, and (2) to identify the factors that act as catalysts in the increased awareness of green purchase and use of IT products and intention to support businesses that have green image resulting from consumer sentiment. The result of this agenda is the framework that has the ability to predict the promulgation of sustainable development

via the relationship between environmental awareness of individuals in IT involved behaviors and willingness to support businesses that have a green image. In the next paragraph, the connections between environmental problems and IT are explained.

A comparison of the first days of the years 2015 and 2016 shows that CO_2 (carbon dioxide) emissions leaped from 399.29 Parts-per million to 402.59 Parts-per million. CO_2 and other greenhouse gasses are dangerous because they trap additional heat in the atmosphere. One of the environmental problems that humanity is dealing with is that the overall global temperature having a tendency to rise in an escalator shape. As a result, not only deaths because of heat [4], but sea level rising also occurs. Satellite images from 1993 to this day show that the approximate rate of increase of sea level was 3.36 millimeters per year [5]. The inevitable result is an increase in flooding, which results in damage to every country's economy [6]. Unfortunately, the World Bank has predicted that by the year 2030, some cities could disappear from the world map [7]. In the meantime, the threshold of technology product usage is increasing exponentially. As a result, the amount of electronic waste and greenhouse gasses are increasing drastically. In 2012, 49 million tons was the estimated weight of electronic products manufactured and 65 million tons is the estimated scale of the same in 2017 [8]. The approximate global quantity of e-waste generated from 2010 through 2014 was 33.8, 35.8, 37.8, 39.8, 41.8 million tons, and from 2015 to 2018 will be 43.8, 45.7, 47.8, 49.8 million tons, respectively [9]. In a nutshell, the connections between the levels of CO_2, global temperature, rising sea and IT usage exist.

Social norm is defined as one of the forces for individual behavior, such as in adopting a technology product [10, 11]. According to Taylor and Todd [10], society can be separated into two levels, *Peer* and *Superior*. *Peers* are people who have equal social position; friends, family, coworkers, media, and so on. *Superiors* are people or intangible objects that can control individuals' behaviors, for example, managers and policies. For *Superior*, environmental policies (e.g., paperless office and energy saving) of an organization should have impact on its personnel's attitudes as well as influence peer awareness of environmental issues. The relationship between such policies and personnel attitudes still needs statistical evidence, which will explain the mechanism of how consumer environmental awareness in IT consumption can push businesses to go green.

Motivation of this work came from acknowledged environmental problems and the need to seek various solutions to reduce the problems or, at least, a guideline/suggestion for solutions to further studies. The goals of this work are (1) reviewing literature that could explain the connections between consumer green IT adopting behavior, purchasing behavior, and supporting green-imaged businesses, (2) categorizing factors into three phases, plus, (3) developing a conceptual framework for future study. Consequently, this is a research agenda for a cross-sectional empirical study of consumer environmental awareness in IT adoption (purchase and use) and the mechanisms that drive an individual to support green-imaged businesses. The future study will scrutinize the influence of the environmental policies of a firm on its employees, and what the difference between consumers who interact with green-imaged organizations and consumers who do not.

This research has distilled the scope of the study into five major questions.

- What are the factors that increase environmental awareness in IT consumption?
- Does environmental social awareness impact IT consumption? And how great is environmental awareness in a society?
- Does an individual's environmental concern and knowledge increase environmental awareness in IT consumption?
- Does individual intention to use/purchase green IT product drive individual support for businesses that are environmentally friendly?
- How strong is the influence of environmental policies of organizations on employee attitudes?

In the next section, this agenda broadly discusses what the basic concepts of green IT and green indicators are; followed by how the study model developed, what study factors and their meaning are, and finally the conclusion with the research framework.

2. Green/Eco-friendly IT and Indicator

'Green' is not just a color, but conveys the sense of something that is environment-friendly. For example, many studies used 'Green' to describe firms, products, and production processes that use less energy, that recycle materials that reduce waste and pollution, and that conserve natural resources. Green IT can

be defined as environmental awareness in practices (e.g., designing, manufacturing, using, disposing, etc.) of IT (hardware and software) to minimize impact on the environment [12]. This agenda focuses on the purchasing and using of green IT product as one of various Green IT study dimensions [12].

There are four green design concepts; reparability, upgradability, power efficiency and recyclability (or simplicity of clean disposable) [13]. The growth of IT product use is expanding on a daily basis and the corresponding increase of electronic waste is an impending crisis that mankind must act on now. The green indicator on a product surface or packaging should proclaim that users, technicians, and manufacturers can repair, upgrade, recycle, and dispose of it whenever necessary [13]. Some examples of green indicators are shown in the Figure 1.

Fig. 1. Examples of Green Indicators

3. Model Development

It is practically impossible for many psychological processes, such as the perception of product benefits, purchasing, and impact on business, etc., to occur simultaneously. Consequently, the constructs in this research agenda should be separated into phases.

Connection of Communication Theories and Information System

The Shannon and Weaver's [14] hierarchy of level and Mason's [15] categories, which was cited by DeLone and Mclean [16, 17], is very applicable to the current study. The concept of the communication theories is used as criteria to separate the study model into the three periods of time. In brief, a categorization of stage classification can be divided by difference of areas of influence, as follows:

- *A study subject's appearance, performance, support, and so on*

Shannon and Weaver's [14] *Technical Level*, *Semantic Level*, Mason's [15] *Production of Information*, *Product*, DeLone and McLean's [16, 17] *Systems Quality* and *Information Quality* are related to transmitting and receiving a message. For this agenda, a message means knowledge and experience that are garnered from consumer examination of an IT product. Moreover, DeLone and McLean's [17] *Service Quality* is an added dimension with no clear comparison to their previous work from which it is derived, but is a measurement scale of support and endorsed by others. This means messages about the green IT product can be ascertained from social stakeholders. In a nutshell, these periods are merely the communication between the study subject and social stakeholders to the consumer.

- *The attitude and action toward the study subject and effect on the user*

Mason's [15] *Receipt*, *Influence on Receipt*, DeLone and McLean's [16, 17] *Use*, *Intention to Use*, and *User Satisfaction* are associated with how the consumer feels regarding the product after he/she believes that assimilated or received information about the product is enough, leaving only two possible results, desire for the product or refusal of it. This period of consumer behavior to individual impact is limited.

- *The potential impact on the system (e.g., organization, society)*

Mason's [15] *Influence on System* and DeLone and McLean's [16] *Organizational impact* are virtually the same stage. In the case of DeLone and McLean [17], their *Net Benefit* means a combination of benefits from individual and organizational use of the study subject. Because one of the goals of this study is to establish the bridge between consumers and organizations, the organizational impact and individual impact should be separated.

Every model is limited in its application and there are always opportunities to design alternative models for different study contexts [18]. Despite the fact that the IS Success model has a wealth of academic ideas, there is no related monetary scale and social stakeholder influence of the consumer in the IS Success model. Thus, it needs some adaptation for specific study subjects, such as eco-friendly IT products.

In order to create the model to predict green IT acceptance and impact on businesses, the model should be separated into three phases, as follow:

- *Green IT Introduction phase* – A society motivates an individual in regard to the importance of green IT products, and green IT products promulgate through communication within society.
- *Green Individual Acceptance phase* – An individual recognizes the significance of the green IT product and voluntarily uses it.
- *Green Organizational Impact phase* – An individual shows intention to purchase product from companies that have an environment-friendly corporate image.

Table 1 shows a comparison of stages between the communication theories, IS success models and this agenda, vertically.

Table 37. Comparison of phases between theories

Study	Phase						
Shannon and Weaver (1949)	Technical Level	Semantic Level	Effectiveness (or Influence) Level				
Mason (1978)	Production	Product	Receipt	Influence on Receipt		Influence on System	
DeLone and McLean (1992)	System Quality	Information Quality	Use	User Satisfaction	Individual Impact	Organizational Impact	
DeLone and McLean (2003)	Sys. Q.	Info. Q.	Service Quality	Use / Intention to Use	User Satisfaction	Net Benefit (Individual + Org.)	
This Agenda	Green IT Introduction			Green Individual Acceptance			Green Organizational Impact

4. The First Phase - Green IT Introduction

Consumption Awareness: Perceived Green Benefit

In order to convince the consumer to buy and use the green IT product, its benefits must be easy to comprehend. This construct, *Perceived Green Benefit*, is based on the relative advantage in Diffusion of Innovation (DOI). *Relative Advantage* is the degree to which an innovation is perceived as being better than the idea it supersedes [11], [19, 20]. Basically, for the ordinary consumer, the most easily understood benefit of eco-friendly IT products is minimized power consumption.

Perceived Benefit, a construct in Health Believe Model (HBM), can be used to add weight to *Relative Advantage* due to its function. *Perceived Benefit* is defined as a belief in efficacy of the advised action to reduce risk or seriousness of impact, and its functions define actions necessary and clarify the positive effects to be expected [21]. Impact on human well-being, psychologically and physically, in purchase of products, including IT and long term use of such products, needs to be scrutinized [18], [22]. In the green IT context, purchasing or using green IT products will reduce risk or seriousness of impact, such as pollution and natural disaster, to some extent.

Not only are there physical benefits of green IT, but there are also psychological benefits. In Unified Theory of Acceptance and Use of Technology 2 (UTAUT2), *Hedonic Motivation* has been defined as the fun or pleasure derived from using a technology [23]. *Hedonic Motivation* has been found to have an influence on the intention to use a technology product which has *Age, Gender* and *Experience* as moderating effects [24]. At this point a new question arises; "is there a difference between common IT products and green IT products in regard to psychological benefit?" Although Venkatesh et al. [23] pointed out that *Hedonic Motivation* is more important for technology product usage; it may not be significant for the adoption of the green IT product. For example, the distinction in usage between smartphones or computers with and without green design should not exist when they have similar appearances and capabilities. On the other end of spectrum, *Hedonic Motivation* can be useful in establishing academic mixtures for the measurement of perceived benefit of the green IT product. Hartmann and Apaolaza-Ibáñez [22] suggested that support of green products can result in moral

satisfaction (*Psychological Benefit*) to the individual. In addition to the utility of the green IT product, the peace of mind that comes from using a green product over a product which has no green label becomes a factor. According to the previous sentence and along with the *Perceived Benefit* (from HBM), consumer delight is one of other benefits that the green IT product can give its users. Emotional benefit is construed to be an important factor in the adoption of green products [18].

Gender observation may show different results. According to studies [35, 36] that female consumers have strong tendency to display, women care more about the environment and benefits from environmental friendliness of IT product than men. However, educational experience of consumers has effect on purchasing behaviors and is needed to minimize deception, such as advertising that provides false or misleading information of a product or service [26].

Therefore, this research agenda integrated applications of *Relative Advantage*, *Perceived Benefit, Hedonic Motivation* and *Psychological Benefit* to shape a new construct titled '*Perceived Green Benefit'*, and defined it as the degree to which an innovation is perceived as being more physically and psychologically appropriate than the idea it supersedes to reduce negative impact on the environment and human health.

Consumption Awareness: Resource Sacrifice

Positive attitude toward a product is the essence to making people accept it, but its worthiness must always be considered a factor as well. Venkatesh et al. [23] added a monetary measurement into Unified Theory of Acceptance and Use of Technology (UTAUT) as a new construct because some people have to pay for an IT product that they want. This illustrates the relevance of *Price Value*. Venkatesh et al. [23] pointed out that *Price Value* has moderating factors, which are *Age* and *Gender*; there must be moderating effects for the adoption of green IT products as well.

For green products, some consumers shunned them when they found that there was additional cost. That is why household income is one of the influence dimensions [27]. Together with Rogers [11], in the adopter categories, people who are *Innovators* (or *Venturesome*) have an ability to obtain new innovations faster than other categories due to financial stability (and accessibility). However, some innovators or consumers from high-income families may not perceive the advantages of eco-friendly IT products. In this case, green-benefit recognition and financial sacrifice have to occur simultaneously. In contrast, if the green IT product presents an equal or lower price compared to a non-green one, it will be easily accepted by consumers.

The added cost for environmental friendliness is not the only barricade in green IT adoption, the often reduced IT product capability is a factor, as well. Performance is the dominant criteria to the purchase of technology products, such as a personnel computer (Desktop/Laptop). Female customers (mostly non gamers), however, value environmentally friendly attributes [28] because most of them are more generous givers than men [24, 25]. Thus, *Gender* is a moderating factor in this context of the adoption of the green IT product. In a situation where customers must pay more money and sacrifice some performance, market share of this green IT product will diminish accordingly. In some cultures, monetary sacrifice for eco-friendliness is preferable.

At this point, monetary sacrifice and functional sacrifice are already discussed; temporal sacrifice should be considered as a resource too. Both time and money can be considered as resources but several researchers found that the two are different [29]. Time is more flexible than finance and consumers may spend more time than money to calculate perceived product worthiness. If consumers have to spend too much time just to identify green products, they will lose interest.

Therefore, this study has essentially three sub-dimensions of the term '*Resource Sacrifice*'; monetary sacrifice, function (or capability) sacrifice and temporal sacrifice.

Consumption Awareness: Noticeability

Noticeability is defined as the degree of visibility, recognition and understandability of the environmental label. For ordinary people, green products and services are likely to be abstract objects. Many consumers have no idea about the redeeming characteristics of the green product [7]. For example, Tierney et al. [30] observed tourists' willingness to purchase and use eco-friendly travel products and services. They found that the respondents did not know what green products or services were or looked like, even though they want to support green products and services. Not surprisingly, those consumers

have no intention to buy and use it. Consumers may err by assuming that different products, which have different characteristics, are similar and can be substituted.

Good advertising for green product is important; it will help consumers to understand how to distinguish green products by educating them on green indicators. According to Velte et al. [13], if the green IT products have a prominent green indicator, which notifies the consumer that the product is manufactured with green design, such as the green label and the Energy Star (as shown in Figure 1), on its package or surface, the consumer may be swayed. The level of educational experience has a positive influence in noticeability of green products as well [31].

In brief, although a consumer acknowledges the advantages of green IT products and he/she has plenty of resources, this consumer may not have behavioral intention to purchase or use green IT products if he/she does not understand the meanings of green indications. At this point, this research agenda arranged three constructs; *Perceived Green Benefit*, *Resource Sacrifice* and *Noticeability*, into a group named Consumption Awareness. We suggest that if a consumer (1) acknowledges the benefits of protecting and preserving the environment, (2) has the willingness to spend more money and time, accept reduced product capability, and (3) understands the meaning of eco-labels, that consumer will have the intention to purchase or use IT products that are environmentally friendly.

Proposition 1 Consumption Awareness (*Perceived Green Benefit*, *Resource Sacrifice* and *Noticeability*) has an influence on *Green Intention in Purchasing or Using IT Product* with *Age*, *Gender* and *Educational Experience* as moderating factors.

Social Awareness: Social influence

In the UTAUT, *Social Influence* is the degree to which an individual perceives the importance of a new system through interaction with other social stakeholders, which has *Gender*, *Age* and *Experience* as its moderating effects. In the UTAUT2, Venkatesh et al. [23] redefined that *Social Influence* is the degree to which the consumer perceives that influential people, including family and friends, believe the consumer had better use a particular technology. Two different things can either be seen as the same or different, the perception likely depends on social norms. For example, intention to download music files; social sphere (e.g., close friends and family) has positive effect in deciding whether or not to buy from legitimate sources or download for free from Torrent sites [32]. Similarly, people will choose an IT product that has the green labels (e.g., the Energy Star) if there is influence from family and friends. If no person of influence gives an individual reason to be concerned about the green IT product, the individual may assume that all IT gadgets are similar.

Media, one of stakeholders of the individual, whether through television, radio, newspapers, the internet [19, 20] and so forth, is a powerful tool for businesses to attract their customers, and for a government to persuade its people. However, before interaction with media; good opinion leaders are necessary for private and public sectors. Businesses often hire famous spokespeople to promote their merchandise. Those famous people on stage and screen can be opinion leaders according to the DOI. Rogers [11] explicated that such a leader has the ability to influence ideas and behavior of others, especially followers, to desire an innovation.

There are two levels in the social sphere as Taylor and Todd [10] suggested; *Peers* and *Superiors*. For this *Social Influence*, this agenda only focuses on the peers (friends, media, relatives, and coworkers) to measure the effect of *Social Influence* on the willingness to adopt green IT products with *Age*, *Gender*, and *Experience* as moderating factors, as Venkatesh et al. [23] suggests. Furthermore, this agenda separated *Superior* level for the construct named *Perceived Green Organizational Policy* to investigate the difference of regression weight between *Peers* and *Superiors* influence.

Proposition 2 Social Awareness (*Social Influence*) has an influence on *Green Intention in Purchasing or Using IT Product* with *Gender*, *Age* and *Experience* as moderating factors.

5. The Second Phase - Green Individual Acceptance

Environmental Concern and Habit

One of classic constructs to measure the level of personal and organizational environmental friendliness is *Environmental Concern* [33] and it has matured to become the New Environmental Paradigm (NEP) by Dunlap et al. [34]. The NEP is a tool to measure beliefs about humanity's ability to upset the balance of nature, the existence of limits to growth for human societies and humanity's right to rule over the rest of nature [34]. NEP is an integrated set of attitudes and beliefs of the individual toward the environment and his/her degree of concern with environmental issues [31], [35]. The scales of the NEP can be broken down into five sections, which are the reality of limits to growth, anti-anthropocentrism, fragility of nature's balance, rejection of exceptionalism and possibility of an eco-crisis [34].

NEP and *Environmental Concern* are not only important in the organizational context, but they are also important to studies of consumers in evaluating their decisions before purchasing [19] and demographic characteristics that are *Age* and *Gender* can moderate this relationship [36]. This research agenda focuses on the individual level. According to Hanson [37], individual environmental concern has positive impact on his/her attitudes and behaviors toward eco-friendly products even through higher costs are required. On the one hand, positive attitude toward environmental issues has influence on consumer willingness to pay for green products and services [27]. In brief, when a person has high environmental concern, he/she will have more interest in eco-friendly IT product.

In reality, not only can we judge the degree of an individual's environmental concern by directly asking a person about the depth of their concern, we can also ask him/her about his/her behaviors and habit (or practices) as well. Broadly speaking, there are numerous green practices of the individual that can be seen as environmentally friendly habits. In UTAUT2, *Habit* means automatic human behaviors due to previous learning or an individual automaticity [23], [35]. *Habit* is a result and a reason for the individual to continue a behavior or abandon it. On the other hand, careless habit can be a reason for ignorance. People could say that they care the environment but it does not mean they are aware of their environmentally careless habits, such as using too many plastic bags, supporting the use of Styrofoam containers, reckless electricity use, tossing depleted batteries into a canal, and the like. With this fact in mind, researchers should investigate the individual's environmental concern and personal environmentally careless habits simultaneously, to see a broad picture of this topic.

Proposition 3 *Environmental Concern and Habit* has an influence on *Green Intention in Purchasing or Using IT Product* with *Gender* and *Age* as moderating factors.

Green Intention in Purchasing or Using IT Product

Attitude of an individual renders his/her intention to perform any behavior. From the proposition 1 to 3, this agenda suggested that consumers will show interest in green IT products when (1) they perceive the green IT benefits, (2) they can sacrifice some individual resources (money, time, accepting reduced functionality of IT product), (3) they understand the meaning of green indicators, (4) they are influenced by peers, (5) they have concern for environmental problems and know that which practices damage the eco-system. In this research agenda, *Green Intention in Purchasing or Using IT Product* is defined as the degree to which an individual plans to look at the environmental friendliness of an IT product before purchase and use of it in the future. This construct is based on *Behavioral Intention.* In the first UTAUT, Venkatesh et al. [23] pointed out that a person will have an intention to use that product when product worthiness and influence from society are realized. In the UTAUT2, the *Behavioral Intention* still plays the same crucial role [23].

In the IS Success theory, higher *System Quality, Service Quality* and *Information Quality* translate into higher *User Satisfaction* and *Use* or *Intention to Use*. Within the context of the green IT product, the *Consumption Awareness* and *Social Influence* can lead to the green purchase and use of an IT product. An observation of the consumer's intention to purchase green IT products can be easily done, but not for the usage of green IT product itself. In some countries like Thailand, people have no idea what a green IT product looks like, and are skeptical about green benefits, which makes the term 'green IT product' abstract to many people. Therefore, instead of *Use*, DeLone and McLean [17] explicated that *Intention to Use* may be an alternative measurement for some contexts when consumption behavior is difficult to measure by using the Likert scale.

6. The Third Phase - Green Organizational Impact

Intention to Support Green Image Business

Many researchers and practitioners believe that consumers have influence on survival of businesses, and in order to meet consumer demand and gain more benefit, the firm should be as flexible as possible. Consumer demand has an effect on the business model because the firm needs to maintain and improve its relationship with consumers, widen their distribution channel, and increase corporate value [38]. Therefore, no business can survive without consumers [39, 40]. With this fact, many businesses struggle to search for strategies to attract consumers, such as improving their image.

Distinct corporate attributes are necessary to create a positive image and reputation. Corporate Social Responsibility (CSR) is the popular way to improve the image and reputation of the firm [41]. One of CSR's practices is environmental responsibility. As McKinsey & Company [1] reported, many businesses installed environmental friendliness into their cores after business people recognized the significance of the green image.

Once the firm has a greener image, quality of the eco-friendly product will contribute to the satisfaction and loyalty of the consumers, and this relationship will grow stronger [42]. Unfortunately, many green products have a weak attraction in consumer eyes because they do not meet the consumer demand and lifestyle [43], and it gets worse when there is minimal or no environmental corporate image. Some consumers want to support businesses that have good image, which drives businesses to show more environmental responsibility. Thus, image and reputation that is visible to the public (e.g., advertising of business environmental responsibility [7] or providing environmental knowledge for consumers [44]) mean competitive advantage of business. This agenda suggests that consumers who already have an intention to purchase or use green IT product will cheer and support green-imaged businesses.

Proposition 4 *Green Intention in Purchasing or Using IT Product* has an influence on *Intention to Supporting Green Imaged Business*.

Perceived Green Organizational Policy

As Taylor and Todd [10] ascertained, society can be broken-down into two tiers: *Superior* and *Peer*. This agenda determined that an organization and its policies are on the *Superior* level. All personnel of an organization have to follow its policies if they want to be part of the organization [45]. In other words, the firm influences its employees via its policies. For environmental policies of a firm, they are available in a sustainability report.

Commonly, a sustainability report aims at public disclosure of information about the non-financial performance of an organization and is an important mechanism to improve moral transparency of an organization. This research agenda gathered data from sustainability reports from 83 randomly searched organizations for comparison purposes. This study found that default environmental topics in the sustainability reports are as follow: (1) Air quality management, (2) Water usage management, (3) Reforestation, (4) Waste management, (5) Recycling and (6) Energy management. These six eco-topics are defaults in ordinary environmental policies of green-imaged businesses.

This agenda defines *Perceived Green Organizational Policy* as the degree to which an individual recognizes philosophy, policies, strategies and the likes of an organization he/she is related to, especially environmental topics, and the questionnaire items will be "Does an organization/institution that you participate in have these six environmental policies [1 = No/2 = Not sure/3 = Yes]", followed by the six environmental topics. The numerical result will be an indicator for categorization between respondents who participate with green-imaged organization and respondents who do not; to compare differentiation in attitude between the two categories. In the case that a respondent answers that he/she does not know or is not sure that his/her organization has the six environmental policies in the firm's culture, this study considers that person as a consumer who has no involvement with a green-imaged organization. The numerical result will also be used to calculate correlation to behavioral intentions as well. There are two behavioral intentions in this agenda, which are *Green Intention in Purchasing or Using IT Product* and *Supporting Green Imaged Business*.

Proposition 5 *Perceived Green Organizational Policy* has an influence on *Green Intention in Purchasing or Using IT Product* and *Intention to Supporting Green Imaged Business*.

7. Conclusion of Research Agenda and Future

Theoretically speaking, a consumer will become interested in eco-friendly IT products when (1) he/she perceives that the benefits of 'green' are better than non-green, physically and psychologically; (2) he/she can pay additional costs, spend extra time and accept reduced performance if they mean environmental friendliness; (3) he/she understands the meanings of green indicators on product surface and packaging; (4) he/she is motivated by *Peer*, such as friends, family and colleagues; (5) he/she realizes which habits damage the environment; and (6) he/she is influenced by *Superior* level of society, especially culture of a workplace that has environmentally friendly policies. However, differences in age, gender and educational experience may show different results. When a consumer has the intention to purchase or use eco-friendly IT product, he/she will have a positive attitude toward businesses that have green image and reputation. This research shows the explained relationships into a research framework, as shown in Figure 2.

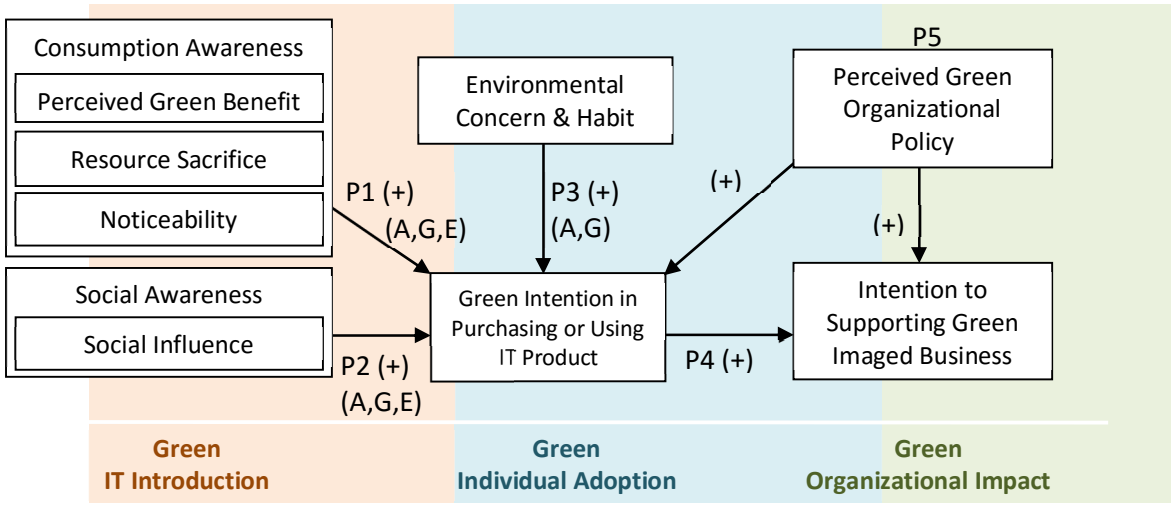

Fig. 2. Research Framework

This research agenda scrutinized the areas of environment, consumer behavior, information technology adoption, corporate environmental image perception and interaction. There will be three potential contributions of the research frameworks, which are:

- Understanding the environmental awareness level of IT product adoption (purchase/use) by consumers and the degree of environmental awareness in a society.
- Understanding customers' attitudes about the environmental situation, their environmental behaviors and their willingness to concern themselves with eco labels in their purchasing behavior.
- Explaining that the environmentally friendly policies in the organizational culture may or may not improve the green-awareness in individual IT product adoption. It also points out the correlation between intention to adopt eco-friendly IT product and willingness to support businesses with eco-friendly reputations, when compared with companies without such reputation with consumers.

Though the study's goals are reached by reviewed literature, categorized phases and the rendered framework, the five research questions still need statistical answers, further suggestions, and so on. The future work will analyze the relationship between the factors to answers all the five research questions.

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